MEASURING PROGRESS

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Progress is determined by the interval between two successive positions occupied by a body moving along a scale of measurement. Our difficulty arises in determining an accurate scale of measurement.

Results are surely comparable when a quality or an achievement is at different intervals measured by the same standard. If the pupils of a fourth grade are given a certain test in arithmetic in October, 1912, and the same pupils are given the same test each succeeding year, the results are undoubtedly comparable, if graded by the same person each time.

This procedure was followed in our schools in testing progress made in arithmetic and spelling. The accompanying charts (Figs. 1–4) show the percentage of pupils who in October, 1912, and in October, 1914, made grades below 60, in the 60's, in the 70's, in the 80's, and in the 90's.

An examination of Fig. 1 shows that 44 per cent of the fourth-grade pupils made grades below 60 in a certain arithmetic test in 1912, while 8 per cent of them made grades above 90.

In 1914 these same pupils were found in the sixth grade and were given identically the same test and their papers were graded by the same teacher who graded them in 1912. Fig. 1 shows that none of these pupils made grades below 60, while 32 per cent of them made grades above 90. As should be expected, there is a very decided improvement.

Figs. 2 and 3 show the results from tests of the fifth grade repeated in the seventh grade with the same pupils. Fig. 2 shows the comparative results where the test consisted entirely of written problems. Fig. 3 shows the results where the major portion of the test consisted of definitions of such terms as decimal, dividend, etc.

The results show that the fifth-grade pupils made a decided improvement in their ability to reason out and solve problems (Fig. 2), while the facts that they memorized were almost forgotten within two years.

These experiments suggest that the ability to reason is a more permanent acquisition than the ability to reproduce facts. All will agree that the former is far more important than the latter and hence should receive the greater emphasis.

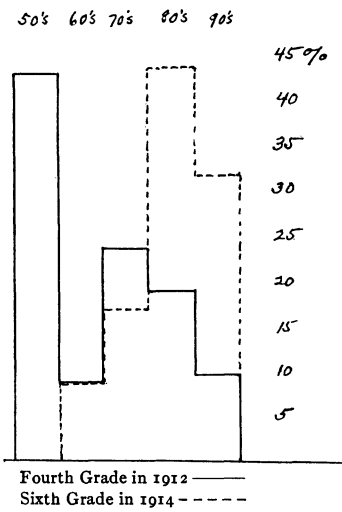


FIG. 1

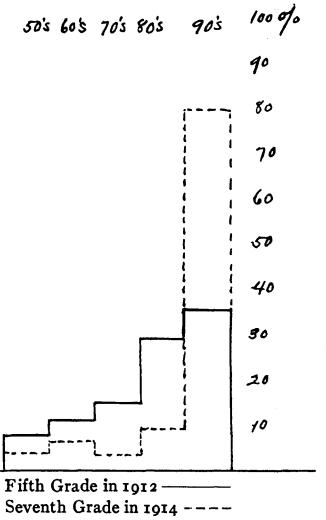


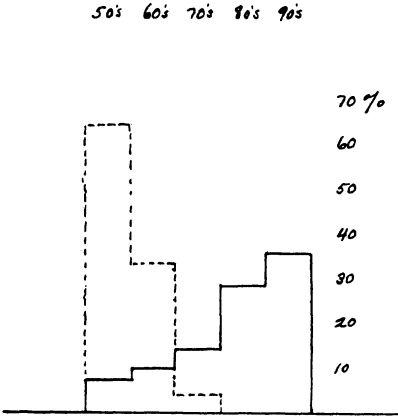
FIG. 2 (Problems)

The improvement made by the sixth-grade class of 1912 is shown by the relative achievements of the children in the eighth grade in 1914. In this case, also, the same test was given after a period of two years to the same pupils. The papers in both tests were graded by the same teachers.

SPELLING

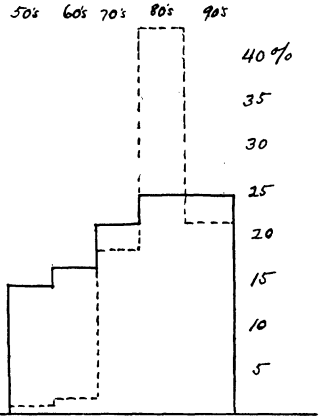
A similar study was made of the progress of pupils in spelling. In 1912 a certain twenty words were spelled by the pupils of the fourth grades. After two years these pupils were found in the sixth grades and these identical words were pronounced to them. The results of the two tests are shown in Figs. 5–7.

A study of these curves suggests that the experiences of the fourth-grade pupils in the fifth and sixth grades made no improvement in their ability to spell a certain twenty words once studied in the fourth grade. In fact, the results in any grade show that the pupils do not spell a word list as well after a school experience of two years as they did during the year in which such words were studied. In other words, the ability to master the words of a sixth grade does not depend very much on what words were studied in



Fifth Grade in 1912 ——
Seventh Grade in 1914 - - - -

FIG. 3 (Definitions)



Sixth Grade in 1912 ——
Eighth Grade in 1914 - - - -

FIG. 4

earlier years. If this be true, may it not be that pupils who fail to make the required standard of one grade in spelling should be promoted to the next, provided they have worked faithfully? Will anyone contend that a pupil should be required to repeat an entire year or semester because he failed to meet the usual requirements in spelling only?

MEASURING RESULTS IN TEACHING GEOGRAPHY

In October, 1914, the pupils of the 6 A class were studying South America. The superintendent and one of the sixth-grade teachers tried a rather new plan in teaching geography to one of these sixth grades.

It was agreed that little attention should be given to mere fact-questions as such. The emphasis each day was to be placed on

thought-provoking questions. No more than three such questions should be assigned for study on any day. The pupils were given such questions twenty-four hours before they attempted to discuss

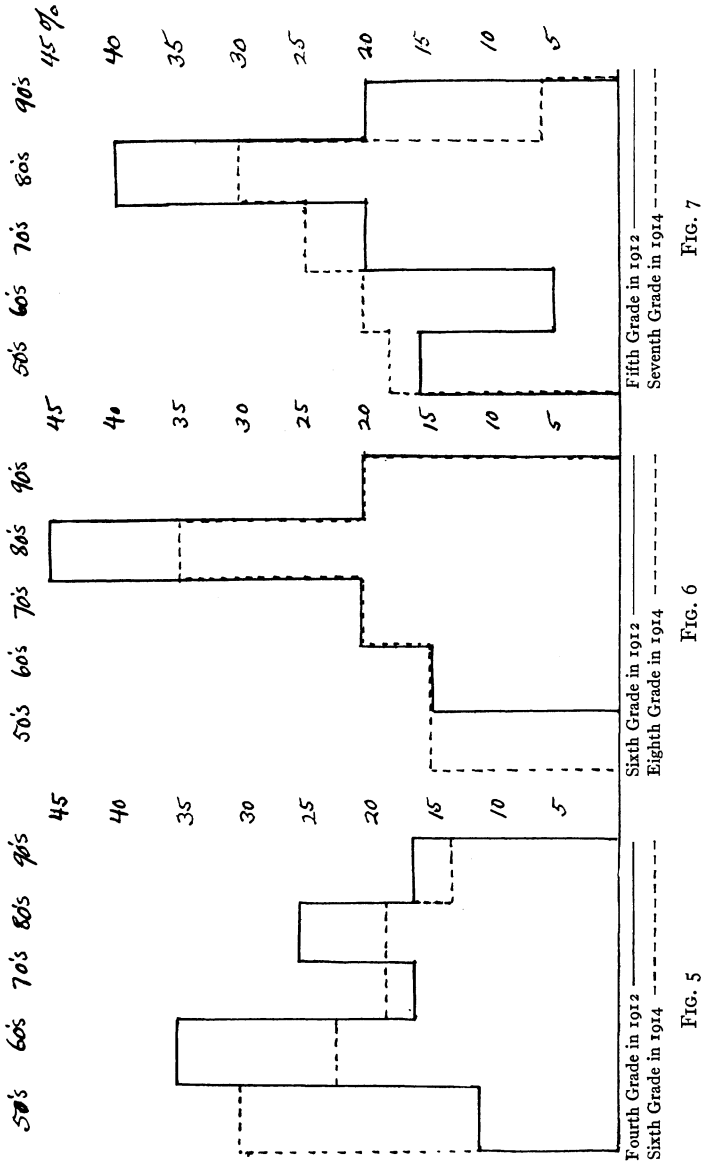


FIG. 5

FIG. 6

FIG. 7

them. They were expected to look up any facts bearing on the questions. During the recitation the pupils were encouraged to

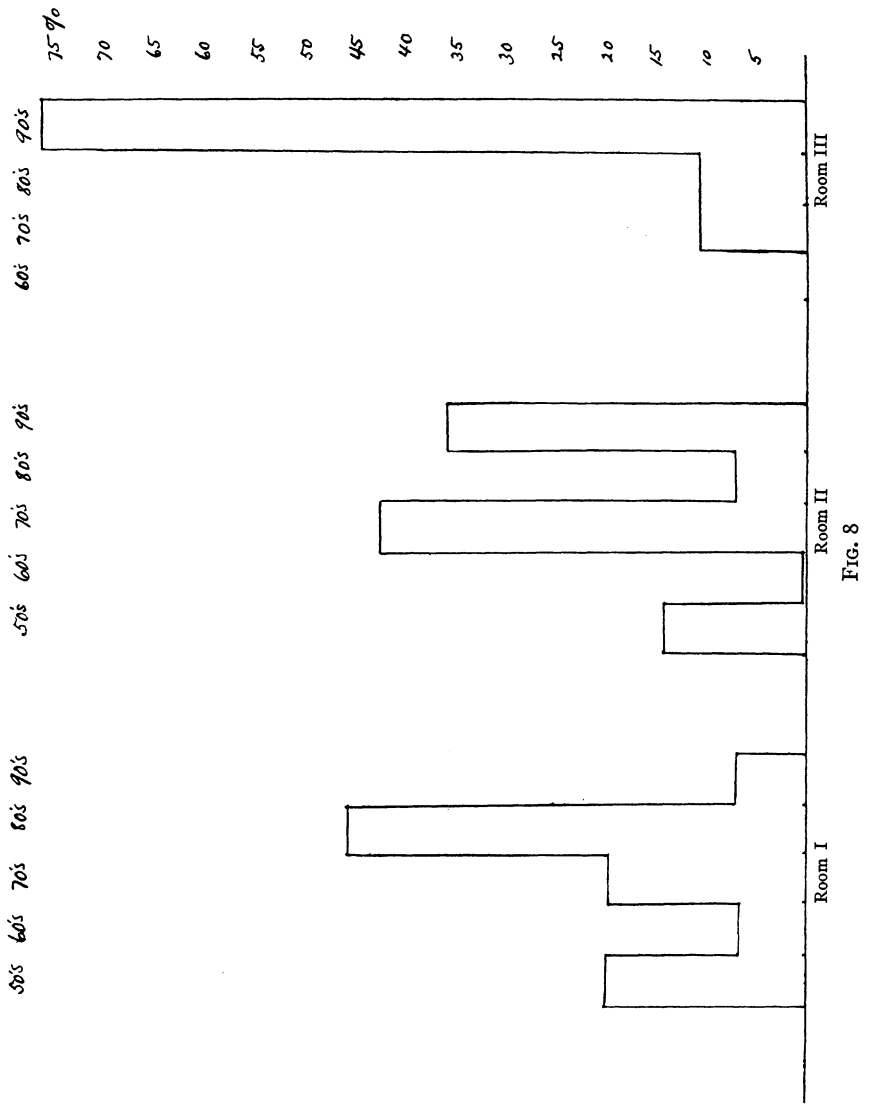


FIG. 8

criticize a recitation by asking the pupil who recited some question that would show the weakness of the position that he took.

No pupil was permitted to supply the information necessary for a complete recitation. Occasionally a question was laid aside for further study.

This kind of work was continued for about twelve weeks. After the continent of South America was completed by all of the sixth

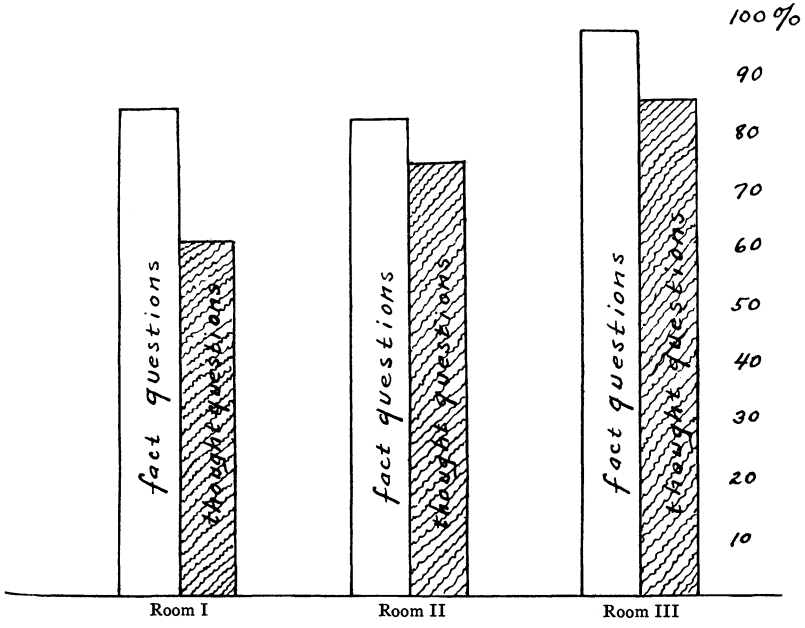


FIG. 9

grades, the superintendent formulated a test consisting of three fact-questions and three thought-questions as follows:

1. Name five countries in South America.
2. What oceans touch South America?
3. In what zones does South America lie?
4. What country of South America has been most progressive? What are the reasons for its progress?
5. What reasons can you give as to why the Guianas do not rank among the most important countries of South America?
6. Why is there such a variety of climate and products in the tropical Andean countries?

This test was given to the class in which the experimental work was done and to two other sixth grades. The papers written were

all graded by a teacher who knew nothing about the experiment. The standing of each room is shown in Figs. 8 and 9.

Room III is the room in which the experimental work was done. It will be noticed that none of the pupils in this room received grades below 70, while 75 per cent of them received grades above 90.

We were interested to learn whether the pupils in Room III, where the thought-provoking questions were emphasized, had neglected the facts on which all reasoning must be based. As each question received a separate grade on each pupil's paper, it was easy to determine their success along this line. Correct answers to the first three questions required that certain facts be held in mind. The pupils in Room III averaged 96 per cent on these fact-questions and 85 per cent on the last three or thought-questions. The pupils in Room I averaged 83 on the fact-questions and 60 on the thought-questions. The pupils in Room II averaged 83 on the fact-questions and 70 on the thought-questions.

No one would contend that such an experiment proves anything conclusively. Doubtless all will agree that these results are food for thought. Pupils may by one process or another accumulate a large number of facts, but if they have not learned how to organize or use such facts, they have gained little of value. On the other hand, if pupils learn to reason from day to day, they are compelled to use facts in order to draw logical conclusions. Pupils will become interested in geography when they see things in their proper relation, when the subject-matter is presented in the form of problems for solution.